

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A surface processing method comprising the steps of:
 - (a) irradiating a surface of an SOG layer with an electron beam from an electron gun so as to expose at least part of the SOG layer; and
 - (b) removing all or part of the exposed parts of the SOG layer by etching;
wherein a magnitude of an accelerating voltage of the electron gun for the electron beam is changed according to an irradiation position of the electron beam so that a depth of the exposed part of the SOG layer can be controlled.
2. (Currently amended) A surface processing method employing a laminated body having a sample material; an intermediate layer formed on a surface of the sample material, and an SOG layer formed on a surface of the intermediate layer, the method comprising the steps of:
 - (a) irradiating the surface of the SOG layer with an electron beam from an electron gun so as to expose at least part of the SOG layer; and
 - (b) removing all or part of the exposed parts of the SOG layer by etching;
wherein a magnitude of an accelerating voltage of the electron gun for the electron beam is changed according to an irradiation position of the electron beam so that a depth of the exposed part of the SOG layer can be controlled.
3. (Canceled)
4. (Original) The surface processing method of Claim 2, wherein the intermediate layer is made from PMMA or silane coupling agent.
5. (Currently amended) The surface processing method of Claim 2, further comprising a step of:

(c) after step (b), carrying out etching using an etchant ~~corroding~~ to remove portions of the SOG layer, the intermediate layer, and the sample material, ~~and processing to form an uneven surface on~~ the surface of the sample material and/or the intermediate layer.

6. (Canceled)

7. (Currently amended) The surface processing method of claim 5, wherein the etchant is an etchant capable of removing ~~corroding~~ the intermediate layer and/or the sample material more easily than the SOG layer.

8. (Currently amended) The surface processing method ~~as disclosed in~~ of Claim 5, wherein the sample material is any of diamond, SiC, quartz, and resin.

9-10. (Canceled)

11. (Currently amended) A surface processing method employing a laminated body having a sample material; an intermediate layer formed on a surface of the sample material, and an SOG layer formed on a surface of the intermediate layer and with a recess or protrusion formed on the surface of the SOG layer, comprising a step of:

(a) carrying out etching using an etchant ~~corroding~~ to remove the SOG layer, the intermediate layer, and the sample material, and forming an uneven surface on the surface of the sample material and/or the intermediate layer,

wherein the recess or protrusion at the surface of the SOG layer is formed by a processing method ~~disclosed in~~ of Claim 1.

12. (Currently amended) The surface processing method ~~as disclosed in~~ of Claim 1, wherein the surface formed by the processing method can be used as a mold for use in molding.

13. (Currently amended) A method for fixing particulate comprising the steps of:

(a) irradiating a surface of an SOG layer with an electron beam from an electron gun so as to expose at least part of the SOG layer mixed with particulate; and

(b) removing part or all of the exposed part of the SOG layer by etching so as to expose the particulate at the surface of the SOG layer or bring the particulate close to the surface;

wherein a magnitude of an accelerating voltage of the electron gun for the electron beam is changed according to an irradiation position of the electron beam so that a depth of the exposed part of the SOG layer can be controlled.

14. (Currently amended) The particulate fixing method ~~as disclosed in~~ of Claim 13, wherein the SOG layer is formed on a sample material or on a surface of an intermediate layer formed on the surface of the sample material.

15. (Canceled)

16. (Currently amended) The particulate fixing method ~~as disclosed in~~ of Claim 14, wherein the intermediate layer is made from PMMA or silane coupling agent.

17. (Previously presented) The particulate fixing method of Claim 13, wherein the particulate is any of carbon nanotube, diamond powder and metallic microparticles.

18-27. (Canceled)

28. (Previously presented) The surface processing method of Claim 1, wherein applied voltage in the vicinity of the surface is changed according to an irradiation position of the electron beam.

29. (Currently amended) The surface processing method ~~as disclosed in~~ of Claim 1, wherein depth of the portion eliminated by etching is also controlled based on electron beam dosage.

30. (Currently amended) A surface processing method comprising the steps of:

- (a) irradiating a surface of a first SOG layer with an electron beam so as to expose at least part of the first SOG layer;
- (b) forming a second SOG layer on a surface of the first SOG layer;
- (c) irradiating a surface of the second SOG layer with an electron beam from an electron gun so as to expose at least part of the second SOG layer; and
- (d) removing all or part of the exposed portions of the first and second SOG layers by etching;

wherein a magnitude of an accelerating voltage of the electron gun for the electron beam is changed according to an irradiation position of the electron beam so that a depth of the exposed part of the SOG layer can be controlled.

31. (Currently amended) The surface processing method ~~as disclosed in~~ of Claim 30, wherein the portion of the second SOG layer irradiated with an electron beam is formed at a position overlapping with the portion of the first SOG layer irradiated with an electron beam.

32. (Currently amended) The surface processing method ~~as disclosed in claim~~ of Claim 30, wherein the width of the portion of the second SOG layer irradiated with an electron beam is narrower than the width of the portion of the first SOG layer irradiated with an electron beam.

33-35. (Canceled)

36. (Currently amended) The surface processing method ~~as disclosed in~~ of Claim 1, wherein a silicone rubber layer is used in place of the SOG layer.

37. (Currently amended) The surface processing method ~~as disclosed in~~ of Claim 30, wherein first and second silicone rubber layers are used in place of the first and second SOG layers.

38. (Currently amended) The particulate fixing method ~~as disclosed in~~ of Claim 13, wherein a silicone rubber layer is used in place of the SOG layer.

39-41. (Canceled)

42. (Currently amended) A surface refining method, employing a laminated body having a sample material and a mask layer formed on a surface side of the sample material, wherein the surface of the mask layer is irradiated with an electron beam from an electron gun, and at least part of the mask layer is exposed and refined, and wherein a magnitude of an accelerating voltage of the electron gun for the electron beam is changed according to an irradiation position of the electron beam so that a depth of the exposed part of the mask layer can be controlled.

43. (Currently amended) The surface refining method ~~as disclosed in~~ of Claim 42, wherein the mask layer is made of SOG.

44. (Currently amended) The surface refining method ~~as disclosed in~~ of Claim 42, wherein the mask layer is made of silicone rubber.

45. (Currently amended) The surface refining method ~~as disclosed in~~ of Claim 42, wherein the electron beam is irradiated towards the laminated body, and the depth of a refined portion of the mask layer can be controlled by adjusting potential on the laminated body side.

46. (Currently amended) The surface refining method ~~as disclosed in~~ of Claim 42, wherein the depth of the refined portion of the mask layer can be also controlled by regulating the electron beam dosage.

47. (Currently amended) The surface refining method ~~as disclosed in~~ of Claim 42, wherein an intermediate layer is positioned between the sample material and the mask layer.

48. (Currently amended) The surface refining method ~~as disclosed in~~ of Claim 42, wherein a further mask layer is laminated onto a surface of the mask layer after refining the mask layer.

49. (Currently amended) The surface refining method ~~as disclosed in~~ of Claim 48, wherein after laminating the further mask layer onto the surface of the mask layer, the surface of the further mask layer is irradiated with an electron beam, and at least part of the further mask layer is exposed and refined.

50-52. (Canceled)

53. (Currently amended) The surface processing method ~~as disclosed in~~ of Claim 2, wherein the surface formed by the processing method can be used as a mold for use in molding.

54-58. (Canceled)

59. (Currently amended) The surface processing method ~~as disclosed in~~ of Claim 2, wherein depth of the portion eliminated by etching is also controlled based on electron beam dosage.

60. (Currently amended) The surface processing method ~~as disclosed in~~ of Claim 2, wherein a silicone rubber layer is used in place of the SOG layer.

61. (New) A surface processing method comprising the steps of:

(a) irradiating a surface of an SOG layer with an electron beam from an electron gun so as to expose at least part of the SOG layer; and

(b) removing all or part of the exposed parts of the SOG layer by etching;

wherein a magnitude of an accelerating voltage of the electron gun for the electron beam is changed according to an irradiation position of the electron beam to give a multi-stepped structure on the SOG layer.

62. (New) A surface processing method employing a laminated body having a sample material; an intermediate layer formed on a surface of the sample material; and an SOG layer formed on a surface of the intermediate layer, the method comprising the steps of:

(a) irradiating the surface of the SOG layer with an electron beam from an electron gun so as to expose at least part of the SOG layer; and

(b) removing all or part of the exposed parts of the SOG layer by etching;

wherein a magnitude of an accelerating voltage of the electron gun for the electron beam is changed according to an irradiation position of the electron beam to give a multi-stepped structure on the SOG layer.